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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Kazuya Midorikawa
Application No.: 10/771,538
Filing Date: 02/05/2004
Title: ELECTRICAL CONNECTOR
Art Unit: 2839
Examiner: DUVERNE, JEAN F
Docket No.: H0314T

BRIEF ON APPEAL

Board of Patent Appeals and Interference
US Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-1450

Submitted: 05/25/2006

Dear Sir:

Following the notice of appeal filed 04/13/06, appellant hereby submits a brief in support of the appeal and the required fee in the amount of \$500.00.

(1) Real Party in Interest:

The real party in interest is assignee HIROSE ELECTRIC CO., LTD.

(2) Related Appeals and Interferences:

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Appellant, appellant's legal representative, or assignee does not know any appeals and interferences which will

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directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims:

Claims 1-7 are rejected and appealed, and claims 8-11 are objected to.

(4) Status of Amendments:

No amendment is filed subsequent to final rejection.

(5) Summary of Claimed Subject Matter:

Object of the Invention: JP 2002-8753 discloses an electrical connector assembly for connecting a pair of circuit boards. Since the electrical connectors are of the low profile and the circuit boards are relatively large, it is difficult to fit the plug into the socket. Thus, it is an object of the invention to provide a low profile electrical connector for facilitating the introduction of a mating connector to the plugging position (Specification, page 3, lines 4-7).

First Subject Matter: As clearly shown in Fig. 1 and defined in claims 1-3 and 6, appellant's invention comprises a peripheral wall (13) having an upper face including a first surface (13A) in an outside area and a second surface (13B) that is positioned in an inside area and lower than the first surface and higher than the terminals (12) and a slant surface (13C) between the first and second surfaces, thus allowing the mating connector to

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slide on the second surface (13B) within the first surface (13A), thereby making it easier to position the mating connector relative to the electrical connector prior to applying a final plugging force.

Since there is the second surface (13B) inside the first surface (13A), it is easy to put the mating connector (30) into the inside of the first surface (13A). Once the mating connector (30) is put in the inside of the first surface (13A), it is slid on the second surface (13B) into the correct plugging position easily (Specification, page 9, lines 14-32).

Second Subject Matter: As clearly shown in Fig. 3 and defined in claims 4-5 and 7, appellant's invention comprises a plugging protrusion (14) provided in the receiving space (16) and having an upper face that includes a first surface (14A) positioned higher than the upper face of the peripheral wall (13), a second surface (14B) provided in a periphery of the first surface (14A) and being substantially flush with the upper face of the peripheral wall (13) and higher than the terminals (12), and a slant surface (14C) between the first and second surface (14A, 14B).

When the mating connector 30 is off, the lower surface 31A abuts against the projecting upper surface 14A of the connector 10. As the connector 30 is slid laterally, the lower surface 31A falls to the flat portion 14B along the slant portion 14C. As the sliding movement continues, the mating connector 30 is brought into the correct plugging position (Specification, page 11, lines 17-30).

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(6) Issues:

In paragraph 2 of the Final Action (12/20/2005), claims 1-7 were rejected under 35 U.S.C. 102(b) as being anticipated by Seto et al.

Seto et al. disclose a board to board electrical connector assembly comprising a pair of identical first and second connectors 10 each including female and male terminals 18 and 20.

Thus, the first issue is whether appellant's invention as defined in claims 1-3 and 6 meets the requirement of non-anticipation under 35 U.S.C. 102(b) with respect to Seto et al.

The second issue is whether appellant's invention as defined in claims 4-5 and 7 meets the requirement of non-anticipation under 35 U.S.C. 102(b) with respect to Seto et al.

(8) Argument:

(8.1) First Issue:

(8.1.1) Seto et al. neither disclose nor suggest any second surface (13B) that is provided in the inside area of an upper face of peripheral wall (13). The examiner's attachment shows, as second surface, an indented portion of the first surface of peripheral wall (P) but no surface inside the first surface. As shown in Fig. 2 of Seto et

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al., there is no second surface after the slant surface. This structure is the same as the slant face 59 of the conventional socket 50 shown in Fig. 4 (Specification, page 2, lines 4-7).

In fact, the "second surface" in the attachment is a portion of the first surface that is provided in the outside area of a top surface of peripheral wall. Thus, in Seto et al, there is no second surface inside the first surface after the slant surface on which a mating connector can slide laterally into the receiving space.

By contrast, according to the invention, when the mating connector (30) is moved in the lateral or longitudinal direction with the lower face (31A) sliding on the upper face of the peripheral wall (13), the housing (31) enters a space between the inside areas (13B) without difficulty. When the lower face (31A) slides on the second surface (13B), the connector (30) is guided into the receiving space (16) (specification, page 9, lines 14-32).

For these reasons, it is submitted that applicant's invention as recited in claims 1-3 and 6 is patentable over Seto et al.

(8.1.2) The Action states, "which further comprises a plugging protrusion (see figs 1-3) in said one engaging means..."

As clearly defined in claim 3, appellant's invention further comprises a plugging protrusion (14) in said receiving space, said plugging protrusion (14) having at

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least one engaging means (18A) in a side surface thereof to engage said mating connector.

However, Seto et al. neither disclose nor suggest any engaging means provided in a side surface of the plugging protrusion to engage the mating connector and, therefore, it is submitted that appellant's invention as defined in claim 3 is separately patentable over Seto et al.

(8.2) Second Issue:

(8.2.1) Seto et al. neither disclose nor suggest any plugging protrusion (14) provided in the receiving space that is surrounded by the peripheral wall (13).

In fact, Seto et al. do not teach any plugging protrusion provided in the receiving space but only peripheral walls. The item 26, which is only an item provided in the receiving space, appears to be plugging protrusion but, in fact, it is the contact post of a male terminal 20. See Fig. 2.

(8.2.2) Seto et al. neither disclose nor suggest any plugging protrusion having an upper face including a first surface (14A) that is higher than the upper face of the peripheral wall (13).

Since there is no plugging protrusion, there are none of the first surface (14A), second surface (14B), and slant surface (14C) of the plugging protrusion.

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For these reasons, it is submitted that appellant's invention as recited in claims 4-5 and 7 is patentable over Seto et al.

Claims 8-11 are objected to. However, as set forth above, their base claims are patentable so that they are believed to be in condition for allowance.

In view of the foregoing, the reversal of the examiner by the honorable Board of Appeals is respectfully solicited.

Respectfully submitted,
TAKEUCHI & KUBOTERA, LLP

A handwritten signature in cursive script, appearing to read "Y. Takeuchi".

By Yusuke Takeuchi

Reg. No. 30,921

Tel: (703) 684-9777

(9) Claims Appendix.

1. An electrical connector comprising:

a substantially rectangular peripheral wall having an upper face;

a receiving space for receiving a mating connector, said receiving space being surrounded by said peripheral wall; and

a plurality of terminals arranged in a pair of opposed walls of said peripheral wall,

wherein said upper face of said peripheral wall includes a first surface in at least part of an outside area of said peripheral wall, a second surface in at least part of an inside area of said peripheral wall, said second surface being positioned lower than said first surface and higher than said terminals, and a slant surface in a transit area between said first and second surfaces of said upper face.

2. The electrical connector according to claim 1, wherein said second surface of said upper face is substantially perpendicular to a plugging direction of said mating connector into said receiving space.

3. The electrical connector according to claim 1, which further comprises a plugging protrusion in said receiving space, said plugging protrusion having at least one engaging means in a side surface thereof to engage said mating connector.

4. An electrical connector comprising:

a substantially rectangular peripheral wall having an upper face;

a receiving space for receiving a mating connector, said receiving space being surrounded by said peripheral wall;

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a plugging protrusion provided in said receiving space for plugging in said mating connector; and

a plurality of terminals arranged in a pair of opposed walls of said peripheral wall,

wherein said plugging protrusion has an upper face which includes a first surface positioned higher than said upper face of said peripheral wall, a second surface provided in at least part of a periphery of said first surface and being substantially flush with said upper face of said peripheral wall and higher than said terminals, and a slant surface in a transit area between said first and second surfaces.

5. The electrical connector according to claim 4, wherein said plugging protrusion has at least one engaging means to engage said mating connector.

6. The electrical connector according to claim 1, wherein said slant surface is made tapered.

7. The electrical connector according to claim 4, wherein said slant surface is made tapered.

8. The electrical connector according to claim 1, wherein each of said terminals has a resilient contact portion, which is wound toward a bottom of said receiving space to provide a bent portion such that when said mating connector is brought into contact with said bent portion, said resilient contact portion is resiliently flexed in a direction substantially perpendicular to a plugging direction of said mating connector.

9. The electrical connector according to claim 4, wherein each of said terminals has a resilient contact portion, which is wound toward a bottom of said receiving space to provide a bent portion such that when said mating connector is brought into contact with said bent portion,

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said resilient contact portion is resiliently flexed in a direction substantially perpendicular to a plugging direction of said mating connector.

10. A second electrical connector plugged in said electrical connector according to claim 1, comprising a plurality of second terminals, each second terminal having a second contact portion and a click projection provided in front of said second contact portion in a plugging direction so that when said second electrical connector is plugged in said electrical connector of claim 1, it provides a click sound upon passing over a contact portion of one of said terminals of claim 1.

11. A fourth electrical connector plugged in said electrical connector according to claim 4, comprising a plurality of fourth terminals, each fourth terminal having a fourth contact portion and a click projection provided in front of said fourth contact portion in a plugging direction so that when said fourth electrical connector is plugged in said electrical connector of claim 4, it provides a click sound upon passing over a contact portion of one of said terminals of claim 4.